

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

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(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 02114PC/RF/YJ	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/SE 2003/001169	International filing date (day/month/year) 04.07.2003	Priority date (day/month/year) 05.07.2002
International Patent Classification (IPC) or national classification and IPC A61L 2/24, A61D 11/00, A01J 7/02		
Applicant DeLaval Holding AB et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
 - a. ☒ (sent to the applicant and to the International Bureau) a total of 7 sheets, as follows:
 - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report |
| <input type="checkbox"/> | Box No. II | Priority |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |

Date of submission of the demand 08.01.2004	Date of completion of this report 04.10.2004
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88	Authorized officer Anders Brinkman/ELY Telephone No. +46 8 782 25 00

Form PCT/IPEA/409 (cover sheet) (January 2004)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SE 2003/001169

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1 - 17 _____ as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☒ the claims:
- pages _____ as originally filed/furnished
- pages* _____ as amended (together with any statement) under Article 19
- pages* 18 - 24 _____ received by this Authority on 20-08-2004
- pages* _____ received by this Authority on _____
- ☒ the drawings:
- pages 1 - 5 _____ as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SE 2003/001169

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-25</u>	YES
	Claims	_____	NO
Inventive step (IS)	Claims	<u>1-25</u>	YES
	Claims	_____	NO
Industrial applicability (IA)	Claims	<u>1-25</u>	YES
	Claims	_____	NO

2. Citations and explanations (Rule 70.7)

Documents cited in the International Search Report:

D1: EP 1099373 A1
D2: US 6279507 A
D3: EP 0800763 A2

Explanation

The invention relates to a method and a device for automatically disinfecting or sterilizing at least a portion of any of a resting, a milking, or a feeding station. One object of the invention is to provide a method and a device which are effective, accurate, safe and of low cost.

D1 discloses a device and a method for disinfecting the feet of cows whilst they are in a feeding box or a walk-through feeding pen. The feeding box is connected to a cow identification system, which is connected to a programmable regulator unit on the foot disinfecting device that is placed in the stand of the feeding box. In this way individual treatment of each cow is possible. By way of example, the frequency of the treatment may differ for each cow. The foot disinfecting device comprises a trough where the cows place their back feet. After about a number of ten cows have visited the feeding box, the trough is emptied and rinsed.

D2 and D3 discloses implements for automatically milking animals.

.../...

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: V

Claim 1

The method according to claim 1, third paragraph, lines 12-13 states that disinfection and sterilisation of a portion of the feeding station is performed automatically. This is also the case in D1 where the trough of the disinfection device is cleaned automatically. As it appears from D1 this can only be done after a cow has left the feeding box.

The method according to claim 1 of the application differs from D1 in that the disinfection device is cleaned automatically if said retrieved information reveals that a milking animal entering said any of a resting, a milking, or a feeding station has an infection that is capable of being transmitted to other milking animals and in that no further milking animals are admitted to enter a station until the disinfection or the sterilization has been performed.

The defined difference mentioned above aims at the object of preventing an infection from being transmitted to other animals, in an accurate, reliable and safe way.

The cleaning of the disinfection device in D1 is made after that a certain number of cows have visited the feeding box without considering if a cow has an infection that can be transmitted to healthy animals or not. There is no mention in D1, or in D2 or D3, that an infected cow would be a reason to clean the disinfection device. The teaching in D1 is therefore not considered to lead the person skilled in the art to the method according to claim 1 of the application.

.../...

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: V

Claim 16

The device according to claim 16 comprises a processing and control device (last paragraph) that is adapted to control the disinfecting and sterilizing apparatus to automatically disinfect or sterilize a portion of e.g. a milking station after that an infectious animal has left the station.

The device according to claim 16 differs from D1 through what is stated on lines 17-21, "provided that said information retrieved reveals that a milking animal entering said ...station has an infection that is capable of being transmitted to other milking animals" and through what is stated on lines 25-27, "before further milking animals are admitted to enter said...station". These differences have been judged to be functional features of the processing and control device and in the end functional features of the claimed device.

The device according to claim 16 is non-obvious to the person skilled in the art for the same reasons as discussed under claim 1.

Summary

The subject matter according to claims 1 and 16, and their respective dependent claims 2-15 and 17-25, is novel, considered to involve an inventive step and considered to be industrially applicable.

CLAIMS

1. A method of automatically disinfecting or sterilizing at least a portion of any of a resting, a milking, or a feeding station (3; 24; 26) provided with an animal identification
5 device (18) and located in an area (1), in which milking animals are allowed to move, wherein each of said milking animals visiting said any of a resting, a milking, or a feeding station is identified, characterized by the steps of:

- retrieving (57) information regarding the health of each of
10 said milking animals entering said any of a resting, a milking, or a feeding station; and

- automatically disinfecting or sterilizing (60) said at least portion of any of a resting, a milking, or a feeding station if said retrieved information reveals that a milking animal
15 entering said any of a resting, a milking, or a feeding station has an infection that is capable of being transmitted to other milking animals, the disinfection or the sterilization being performed after that said infectious milking animal has left said any of a resting, a milking, or a feeding station, wherein

20 - no further milking animals are admitted to enter said any of a resting, a milking, or a feeding station until the disinfection or the sterilization has been performed.

2. The method of claim 1 wherein

- said any of a resting, a milking, or a feeding station is
25 connected to a computer (19), which holds a database with information of said milking animals and their health; and

- said step of retrieving information is performed by means of referring to said database.

3. The method of claim 2 wherein said information regarding the health of said milking animals is entered manually into said database; or is entered automatically from a computer-connected measuring device for measuring a health-related parameter of
5 said milking animals.

4. The method of claim 1 wherein

- a health-related parameter of each of said milking animals is measured (57) by means of a measuring device (47) connected to said any of a resting, a milking, or a feeding station; and

10 - said step of retrieving information is performed by means of referring to said measuring device.

5. The method of any of claims 1-4 wherein said step of automatically disinfecting or sterilizing said at least portion of any of a resting, a milking, or a feeding station is
15 performed (62, 60) irrespective of said information retrieved if the time lapsed since said at least portion of any of a resting, a milking, or a feeding station was last disinfected or sterilized is above a threshold value.

6. The method of claim 5 comprising:

20 - retrieving (57) information regarding the health of each of said milking animals in said area (1); and

- setting said threshold value depending on the percentage of said milking animals in said area (1) that have an infection capable of being transmitted to other milking animals, where
25 said percentage is deduced from said information retrieved regarding the health of each of said milking animals in said area (1).

7. The method of any of claims 1-5 wherein said step of automatically disinfecting or sterilizing said at least portion of any of a resting, a milking, or a feeding station is performed (52, 60) irrespective of said information retrieved if
5 it is established that no milking animal visits, or is to visit, said any of a resting, a milking, or a feeding station.

8. The method of any of claims 1-7 wherein said step of automatically disinfecting or sterilizing said at least portion of any of a resting, a milking, or a feeding station is
10 performed by means of exposing said at least portion of any of a resting, a milking, or a feeding station to any of heat, radiation, or a chemical.

9. The method of claim 8 wherein said step of automatically disinfecting or sterilizing said at least portion of any of a
15 resting, a milking, or a feeding station comprises the step of flushing said at least portion of any of a resting, a milking, or a feeding station with a hot fluid.

10. The method of claim 8 wherein said step of automatically disinfecting or sterilizing said at least portion of any of a
20 resting, a milking, or a feeding station comprises the step of irradiating said at least portion of any of a resting, a milking, or a feeding station with UV light.

11. The method of any of claims 1-10 wherein said at least portion of any of a resting, a milking, or a feeding station
25 includes surfaces of said any of a resting, a milking, or a feeding station, which an animal visiting said any of a resting, a milking, or a feeding station may contact for a specified purpose or accidentally.

12. The method of any of claims 1-11 wherein

- said any of a resting, a milking, or a feeding station includes a milking station (3); and

- said at least portion thereof includes a respective teat receiving opening of each teat cup (11) of the milking station; a respective teat receiving opening of each teat cleaning cup (21) of the milking station, if any; teat cleaning brushes (22) of the milking station, if any; a front portion of a robot arm (15) of the milking station; and a manger (17) of the milking station.

10 13. The method of any of claims 1-12 wherein

- said any of a resting, a milking, or a feeding station includes a feeding station (24); and

- said at least portion thereof includes surfaces of a manger of the feeding station.

15 14. The method of any of claims 1-13 wherein

- said any of a resting, a milking, or a feeding station includes a resting station (26); and

- said at least portion thereof includes a floor of the resting station.

20 15. The method of any of claims 1-10 wherein

- said any of a resting, a milking, or a feeding station includes each station (3, 24, 26) located in said area that is provided with an animal identification device; and

25 - said at least portion thereof includes all surfaces of each station an animal in said area may contact for a specified purpose or accidentally.

16. A device for automatically disinfecting or sterilizing at least a portion of any of a resting, a milking, or a feeding station (3; 24; 26) provided with an animal identification device (18) and located in an area (1), in which milking animals
5 are allowed to move, wherein each of said milking animals visiting said any of a resting, a milking, or a feeding station is identified, characterized in:

- a processing and control device (19) adapted to retrieve (57) information regarding the health of each of said milking animals
10 entering said any of a resting, a milking, or a feeding station; and

- a disinfecting or sterilizing apparatus (29-34) capable of automatically disinfecting or sterilizing said at least portion of any of a resting, a milking, or a feeding station, said
15 disinfecting or sterilizing apparatus being connected to said processing and control device (19), wherein

- said processing and control device (19) is adapted, provided that said information retrieved reveals that a milking animal entering said any of a resting, a milking, or a feeding station
20 has an infection that is capable of being transmitted to other milking animals, to control said disinfecting or sterilizing apparatus to automatically disinfect or sterilize said at least portion of any of a resting, a milking, or a feeding station after that said infectious milking animal has left said any of a
25 resting, a milking, or a feeding station, and before further milking animals are admitted to enter said any of a resting, a milking, or a feeding station.

17. The device of claim 16 wherein said processing and control device holds a database with information regarding the health of
30 each of said milking animals entering said any of a resting, a

milking, or a feeding station, which information said processing and control device is adapted to retrieve.

18. The device of claim 17 wherein

- said processing and control device is connected to a measuring device (47) for measuring a health-related parameter of said milking animals, and

- said processing and control device (19) is adapted to retrieve said information regarding the health of each of said milking animals entering said any of a resting, a milking, or a feeding station in the form of said health-related parameter.

19. The device of claim 16 comprising

- a measuring device (47) for measuring a health-related parameter of said milking animals, wherein

- said processing and control device (19) is adapted to retrieve said information regarding the health of each of said milking animals entering said any of a resting, a milking, or a feeding station in the form of said health-related parameter.

20. The device of any of claims 16-19 wherein said processing and control device is adapted to control said disinfecting or sterilizing apparatus to automatically disinfect or sterilize (62, 60) said at least portion of any of a resting, a milking, or a feeding station irrespective of said information retrieved if the time lapsed since disinfection or sterilization was last performed by said apparatus is above a threshold value.

21. The device of claim 20 wherein said threshold value is set depending on the percentage of said milking animals in said area (1) that have an infection capable of being transmitted to other milking animals.

22. The device of any of claims 16-21 wherein said processing and control device is adapted to control said disinfecting or sterilizing apparatus to automatically disinfect or sterilize (52, 60) irrespective of said information retrieved if no milking animal visits, or is to visit, said any of a resting, a milking, or a feeding station.
23. The device of any of claims 16-22 wherein said disinfecting or sterilizing apparatus is any of a heat supply apparatus, a chemical supply apparatus, or a radiation exposure apparatus (32-34).
24. The device of claim 23 wherein said disinfecting or sterilizing apparatus is an apparatus for flushing said at least portion of any of a resting, a milking, or a feeding station with a hot fluid (32).
25. The device of any of claims 16-24 wherein said at least portion of any of a resting, a milking, or a feeding station includes surfaces of said any of a resting, a milking, or a feeding station, which an animal visiting said any of a resting, a milking, or a feeding station may contact for a specified purpose or accidentally.